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Donald A. Wilhite

University of Nebraska - Lincoln, dwilhite2@unl.edu

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Drought Planning and State Government: Current Status¹

Donald A. Wilhite
Department of Agricultural Meteorology
International Drought Information Center
University of Nebraska
Lincoln, NE 68583-0728

Abstract

Recent droughts, calls for action by regional, national, and international organizations, and the availability of model plans have stimulated considerable activity in the development of drought contingency plans by state government in the United States. In 1982 only three states had prepared formal drought plans; currently 23 states have completed plans. These planning efforts have often been conducted in conjunction with a state's overall water management planning initiative. Clearly, states can now be labeled as policy innovators in the field of drought planning. The atmospheric science community should play a prominent role in the planning process at all levels of government.

1. Introduction

In the past decade, droughts have been a prevalent feature of the American landscape. These droughts have resulted in significant impacts in a myriad of economic sectors including agriculture, transportation, energy, recreation, and health; they have also had adverse environmental consequences. In our society's attempt to cope with the effects of these extended periods of water shortage in recent years, the inadequacy of federal and state contingency planning efforts has been confirmed once again. Our inability to respond effectively has also illustrated the inflexibility of existing water management systems and policies, as well as the lack of coordination between and within levels of governments.

Previous studies have demonstrated that the impacts of both short-term and multiyear drought have been aggravated by poorly conceived or nonexistent assessment and response efforts by governments. Those assessment and response programs that do exist have been characterized as largely ineffective, poorly coordinated, and untimely (General Accounting Office 1979; Wilhite et al. 1986; Wilhite 1987). The lessons of these past efforts strongly suggest that the risk management or proactive approach to drought management is a more effective mitigation tool than the crisis management or reactive approach. Sharply focused contingency plans, prepared in advance, can

assist government and others in the early identification of drought and its likely impacts, lessen personal hardship, improve the economic efficiency of resource allocation, and, ultimately, reduce drought-related impacts and the need for government-sponsored assistance programs.

2. Calls for action for drought planning

The scientific and policy communities have expressed considerable concern about the continuing inability of governments to respond to drought in an effective and timely manner. This concern has resulted in "calls for action" by regional, national, and international organizations. These calls include recommendations from the Western Governors Policy Office (1978), General Accounting Office (1979), National Academy of Sciences (1986), World Meteorological Organization (1986), Interstate Conference on Water Policy (1987), and Great Lakes Commission (1990). In light of a possible increase in the frequency and severity of extreme events in association with changes in climate, a recent Environmental Protection Agency report (Smith and Tirpak 1989) has called for the development of a national drought policy to coordinate federal response to drought.

The American Meteorological Society can now be added to the list of advocates for improved drought management. In a recent statement on meteorological drought prepared by the AMS Committee on Applied Climatology (Orville 1990), the committee indicated that the dearth of plans in the past has exacerbated the impacts of drought. Furthermore, the committee recommended that "responsible government institutions develop a plan of action for drought response." The committee also suggested that "this type of strategic planning has the potential to ease the impacts of future droughts."

3. Current status of drought contingency planning by state government

If progress is to be made in raising the level of drought preparedness in the United States, states must take

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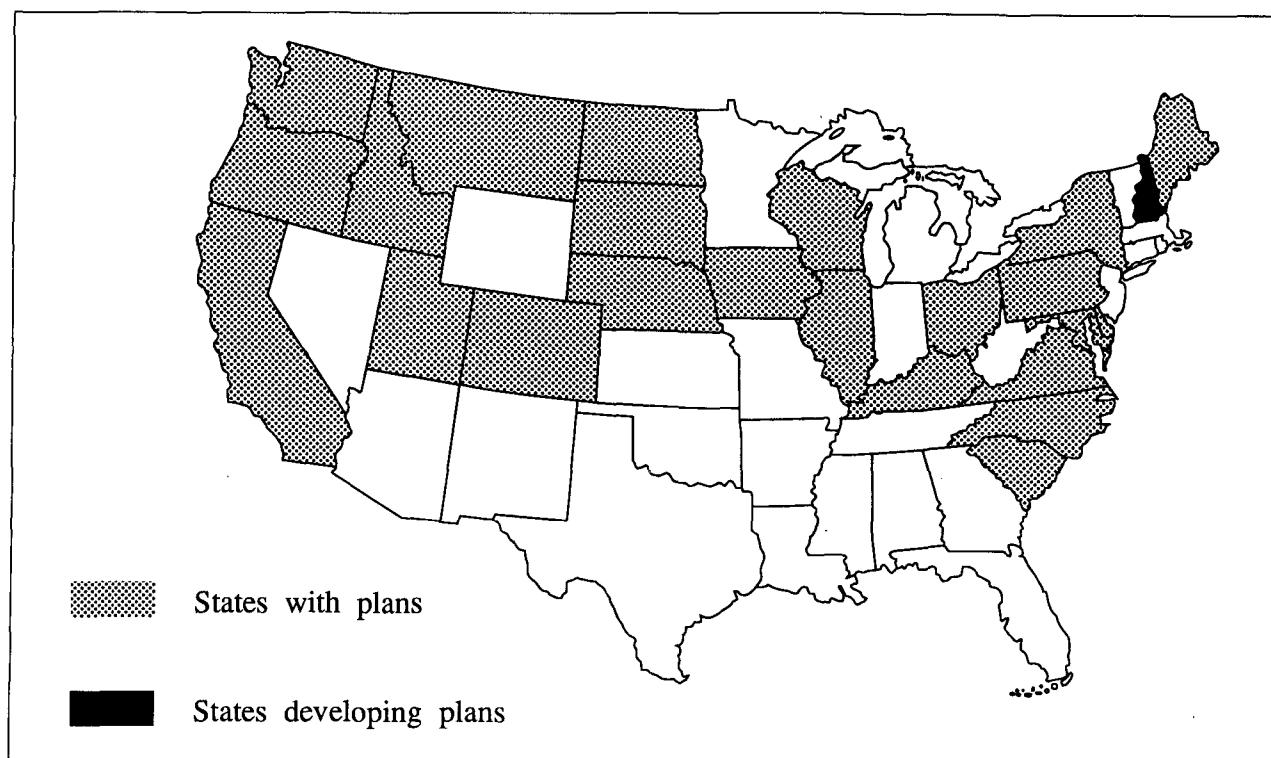


FIG. 1. States in the contiguous United States with formal drought plans, as of June 1990. Alaska and Hawaii have not prepared drought plans. Refer to Table 1 for further information on the status of planning efforts for individual states.

the lead. Historically, state governments have played a passive role in governmental efforts to assess and respond to drought. During the widespread and severe drought of 1976–77, for example, no state had prepared a formal drought response strategy. In 1982 only three states had developed plans: South Dakota, New York, and Colorado. Generally speaking, states have relied on the federal government to come to their rescue when water shortages reach near-disaster proportions by providing relief to drought victims. The federal government provided nearly \$8 billion in relief as a result of the sequence of drought years in the mid-1970s (Wilhite et al. 1986); federal assistance efforts totaled more than \$5 billion in response to the 1988–89 droughts (Riebsame et al. 1990).

The increasing awareness of inefficient past response efforts, calls for action, and the impacts of the droughts of the late 1980s have generated considerable momentum at the state level for the establishment of contingency plans. A survey conducted in April 1988 and updated in June 1990 indicates that 23 states have now developed drought plans, with one state (New Hampshire) in the process of developing a plan (Wilhite 1990). The pattern of state drought contingency planning is illustrated in Fig. 1. Table 1 gives a state-by-state summary of the status of planning efforts. In addition, action on the development of a plan is pending in several states.

The pattern of states with drought plans illustrated in Fig. 1 is complex and can be only partially explained on the basis of the climatology of drought. Impediments to plan development have been discussed at some length by Wilhite and Easterling (1987). However, each state's decision to develop (or not to develop) a drought plan is based on specific climatological, political, economic, and demographic factors. An analysis of the relative importance of these factors is in progress (Wilhite and Rhodes, to be completed in 1991). For those states that have developed plans, planning efforts have often been conducted in conjunction with an overall water management planning initiative. The atmospheric science community in some states has provided substantial input to the planning process. Clearly, states can now be labeled policy innovators in drought planning.

Despite the numerous calls for the development of a national drought policy and plan, the federal government has not acted on these recommendations. The primary reason for the lack of progress by federal agencies seems to be the multidisciplinary nature of drought and the cross-cutting responsibilities of federal agencies for drought assessment and response programs. A single federal agency must take the lead in coordinating the development of a plan. It is unclear at present, however, which federal agency would be the most logical choice to lead this interagency effort.

TABLE 1. Status of Drought Panning: June 1990¹

State	Agency responding	Does state have a drought plan?
Alabama	Governor	No. The state had a "prioritization/action" plan, established by the Drought Task Force during the 1986 drought. A drought plan does exist for the Apalachicola–Chattahoochee–Flint basin.
Alaska	Department of Natural Resources Div. Land and Water Management	No.
Arizona	Department of Water Resources	No.
Arkansas	Soil and Water Commission	No.
California	Department of Water Resources	Yes. Annual contingency plans have been developed during the past several years to address water management alternatives if water shortages continue.
Colorado	Division of Disaster Emergency Services	Yes. <i>Colorado Drought Response Plan</i> .
Connecticut	Department of Health Services	No. <i>The Connecticut Plan</i> (comprehensive water supply plan) requires each Public Water System to have a drought contingency plan.
Delaware	Department of Natural Resources and Environmental Control, Division of Water Resources	Yes. Outlined in <i>Management of Water Resources in Delaware: Water Conservation</i> . The state also participates in the <i>Drought Contingency Plan</i> of the Delaware River Basin Commission.
Florida	Department of Environmental Regulation	No. Florida does not have a formal drought plan, but the state is divided into water management districts that have developed plans.
Georgia	Department of Natural Resources	No. The state has <i>Water Resources Management Strategy</i> , which addresses water shortages and recommends actions to mitigate shortages.
Hawaii	Governor's office	No.
Idaho	Department of Water Resources	Yes. <i>Idaho Drought Plan</i> .
Illinois	Illinois State Water Survey	Yes. The Drought Task Force is co-chaired by the Director of the Division of Water Resources and the Manager of the Public Water Supply Section, Illinois Environmental Protection Agency.
Indiana	Governor's office	No. A task force was formed in 1988 but no formal plan has been developed.
Iowa	Department of Natural Resources	Yes. A draft of the <i>State Drought Response Plan</i> was completed in early 1990.
Kansas	Kansas Water Office	No. A standing drought plan does not exist but a task force structure for monitoring and responding to drought is in place as a result of the 1988–89 water shortages.
Kentucky	Department for Environmental Protection	Yes. <i>Kentucky Water Shortage Response Plan</i> .
Louisiana	Governor	No.
Maine	Governor	Yes. Draft "plan of action" has been completed.
Maryland	Department of Natural Resources	Yes. <i>Response Plan for Drought and Other Water Shortage Emergencies</i> .

¹This table is based on a survey of states done in the summer of 1988 and updated in the spring of 1990.

TABLE 1 continued. Status of Drought Panning: June 1990¹

State	Agency responding	Does state have a drought plan?
Massachusetts	Executive Office of Environmental Affairs	No. A drought plan was drafted in 1980–81 but was never finalized. Local officials are required to submit drought or contingency plans as part of a local water resources management plan.
Michigan	Department of Agriculture	No. Department-level response plans exist as a result of the 1988 drought. Action is pending on a state drought plan.
Minnesota	Department of Natural Resources	No. A drought contingency plan for the Mississippi River was developed in 1988 in response to low-flow periods. This plan was developed by the Twin Cities Water Supply Task Force.
Mississippi	Governor	No.
Missouri	Department of Agriculture	No.
Montana	Montana Disaster and Emergency Services Division	Yes. <i>Montana Water Plan—Drought Management.</i>
Nebraska	University of Nebraska	Yes. <i>Drought Assessment and Response Plan.</i>
Nevada	Governor	No.
New Hampshire	Department of Environmental Services—Water Resources Division	In process of developing a drought management plan.
New Jersey	Department of Water Resources	No. Drought response is provided for in the state water plan, <i>Emergency Water Supply Allocation Plan Regulations</i> . The state participates in the Drought Contingency Plan of the Delaware River Basin Commission.
New Mexico	Energy, Minerals, and Natural Resources Department	No.
New York	State Department of Environmental Conservation	Yes. <i>State Drought Preparedness Plan</i> . The state also participates in the <i>Drought Contingency Plan</i> of the Delaware River Basin Commission.
North Carolina	Department of Natural Resources and Community Development	Yes. <i>The Drought Plan</i> was developed by the North Carolina Division of Emergency Management.
North Dakota	Division of Emergency Management	Yes. <i>North Dakota Drought Contingency Plan.</i>
Ohio	Department of Natural Resources	Yes. <i>Drought Preparedness and Response Matrix for the State of Ohio</i> . The plan is coordinated by the Emergency Management Agency.

¹This table is based on a survey of states done in the summer of 1988 and updated in the spring of 1990.

In the final analysis, it may take an executive order to initiate the process at this level. In the meantime, the federal government continues to contemplate the need for a national policy and plan.

An examination of existing state drought plans reveals that they have certain key elements in common. Administratively, a task force is responsible for the operation of the system and is directly accountable to the governor. The task force keeps the gover-

nor advised of water availability and potential problem areas; it also recommends policy options for consideration. Operationally, drought plans have three features in common. First, a water availability committee is established to continuously monitor water conditions and prepare outlooks a month or season in advance. Since most of the information necessary to comprehensively monitor water conditions (i.e., precipitation and temperature, streamflow, ground-water levels,

TABLE 1 continued. Status of Drought Panning: June 1990¹

State	Agency responding	Does state have a drought plan?
Oklahoma	Water Resources Board	No. There have been discussions and recommendations regarding the development of a drought plan but nothing is in progress.
Oregon	Water Resources Department	Yes. <i>Drought: Annex to State Emergency Operations Plan.</i>
Pennsylvania	Bureau of Water Resources Management	Yes. <i>Pennsylvania Drought Contingency Plan</i> for the Delaware River Basin. The task force established for the <i>Drought Contingency Plan</i> of the Delaware River Basin is expanded as necessary to include the remainder of the state.
Rhode Island	Department of Administration—Division Planning	No. <i>Comprehensive Water Supply Plan</i> is being drafted; the <i>Emergency Assistance Plan</i> deals briefly with drought.
South Carolina	Water Resources Commission	Yes. <i>South Carolina Drought Response Plan.</i>
South Dakota	Department of Agriculture—Rural Development Program	Yes. <i>State Drought Recovery Operation Procedures.</i>
Tennessee	State Planning Office	No. The <i>Interim State Drought Management Plan</i> was developed in 1987 but has not been finished.
Texas	Texas Water Development Board	No. The development of a drought plan has been discussed, but no action is pending.
Utah	Division of Water Resources	Yes, <i>State Water Plan—Drought Relief</i> section.
Vermont	Agency of Natural Resources	No.
Virginia	Governor's office	Yes. The state has eleven basin water supply plans, summarized in <i>Virginia's Water Supply—Statewide Summary</i> . The State Drought Monitoring Task Force continuously monitors drought parameters and meets on an as-needed basis. Local governments have major responsibility for drought planning.
Washington	Department of Ecology	Yes. <i>Drought Contingency Plan.</i>
West Virginia	Governor's office	No.
Wisconsin	Department of Natural Resources	Yes. <i>Drought Management Plan.</i>
Wyoming	Department of Agriculture	No.

¹This table is based on a survey of states done in the summer of 1988 and updated in the spring of 1990.

snowpack, soil moisture, and meteorological forecasts) is available from state or federal agencies, the primary role of the committee is to coordinate the collection and analysis of this information and the delivery of products to decision makers on a timely basis. The committee assimilates this information and issues timely reports and recommendations. Second, a formal mechanism usually exists to assess the potential impacts of water shortages on the most

important economic sectors. In some states this task is accomplished by a single committee, or, more commonly, separate working groups are established to address each sector. Third, a committee, or the task force referred to previously, usually exists to consider current and potential impacts and to recommend response options to the governor.

Although many of the mitigative programs implemented by states during recent droughts can be

characterized as emergency actions taken to alleviate the crisis at hand, these actions were often quite successful. As states gain more experience assessing and responding to drought, future actions will undoubtedly become more timely and effective. State drought contingency plans will become broader in scope, addressing a wider range of potential mitigative actions, including more meaningful levels of intergovernmental coordination. In time this will help states avoid or reduce the impacts, conflicts, and personal hardship associated with drought. To be successful, drought planning must be integrated between local, state, and federal levels of government and with regional organizations, as appropriate.

Fortunately, many resources are now available to assist governments in the drought planning process. The existence of model plans (Western States Water Council 1987; Wilhite 1990) and 23 state plans provide a critical reference for states desiring to develop a plan or revise an existing plan. In addition, several regional organizations have considerable experience in drought planning and can assist states in plan development (e.g., Delaware River Basin Commission, Great Lakes Commission, and Western Governors' Association).

4. Conclusion

From the progress that has been achieved in drought planning by state government in the past five years, it seems clear that some valuable lessons have been learned about the need for preparedness. The key question that has yet to be answered is will these lessons be forgotten when the rains return, or will states continue to strive to lessen vulnerability to future episodes of drought? It can be argued that although some degree of apathy is unavoidable, continuing drought, recent "calls for action" for the development of contingency plans, and existing plans give us reason to be optimistic that the issue of drought planning will remain an important agenda item for state governments in the United States. The future commitment of the federal government is far less

certain. It is clear, however, that the meteorological community should play a vital role in the planning process, whether at the local, state, or federal level of government.

References

- General Accounting Office, 1979: Federal response to the 1976–77 drought: What should be done next? Report to the Comptroller General, 29 pp.
- Great Lakes Commission, 1990: A guidebook to drought planning, management and water level changes in the Great Lakes. Great Lakes Commission, 61 pp.
- Interstate Conference on Water Policy, 1987: Statement of policy 1986–87. *Interstate Conf. on Water Policy*, Washington, D.C., 39 pp.
- National Academy of Sciences, 1986: The National Climate Program: Early achievements and future directions. National Academy of Sciences, 55 pp.
- Orville, H.D., 1990: AMS statement on meteorological drought. *Bull. Amer. Meteor. Soc.* **71**, 1021–1023.
- Riebsame, W.E., S.A. Changnon, Jr. and T.R. Karl, 1990: *Drought and Natural Resources Management in the United States: Impacts and Implications of the 1987–89 Drought*. Westview Press, 174 pp.
- Smith, J.B., and D. Tirpak, Eds., 1989: The potential effects of global climate change on the United States. Environmental Protection Agency (EPA-230-05-89-050), 411 pp.
- Western Governors Policy Office (WESTPO), 1978: Managing resource scarcity: Lessons from the mid-seventies drought. Institute for Policy Research, 78 pp.
- Western States Water Council, 1987: A model for western state drought response and planning. Western States Water Council, 76 pp.
- Wilhite, D.A., 1987: The role of government in planning for drought: Where do we go from here? 1987: *Planning for Drought: Toward a Reduction of Societal Vulnerability*. Wilhite, D.A. and W.E. Easterling, Eds., Westview Press., 597 pp.
- , 1990: Planning for drought: A process for state government. IDIC Tech.Rep. Series 90–1, 52 pp.
- , and W.E. Easterling, Eds., 1987: *Planning for Drought: Toward a Reduction of Societal Vulnerability*. Westview Press, 597 pp.
- , N.J. Rosenberg, and M.H. Glantz, 1986: Improving federal response to drought. *J. Climate Appl. Meteor.*, **25**, 332–342.
- WMO, 1986: Model drought response plan. Memo to Permanent Representatives of Members of WMO, 14 May. World Meteorological Organization, 2 pp.